EOS Production Sites
Network Performance Report

This is a monthly summary of EOS network performance testing between production sites for April 2007 -- comparing the measured performance against the requirements.

Highlights:

- Highly stable flows
- Only 2 flows below "Good":
  - GSFC GES DAAC to EROS (improved from Low to "Almost Adequate"
    - Switched to use NISN backbone to Chicago. – no effect on thruput
  - JPL to LaRC Adequate
- New "Integrated" graphs are now included in this report
  - Area graphs combine iperf results with user flow
  - See detailed description below
- Requirements Basis:
  - December '03 requirements from BAH.
  - Updated to handbook 1.4.1 (3/22/06)
  - Additional Updates Incorporated:
    - New AIRS reprocessing flows (8/06)
    - GEOS requirements – Flows began in Nov '06
    - All LaRC "Backhaul" Requirements removed
    - Extension of TRMM, QuikScat missions
- Significant changes in testing are indicated in Blue, Problems in Red

Ratings Changes:

Upgrade: ↑:
GSFC → EROS: Low → Almost Adequate

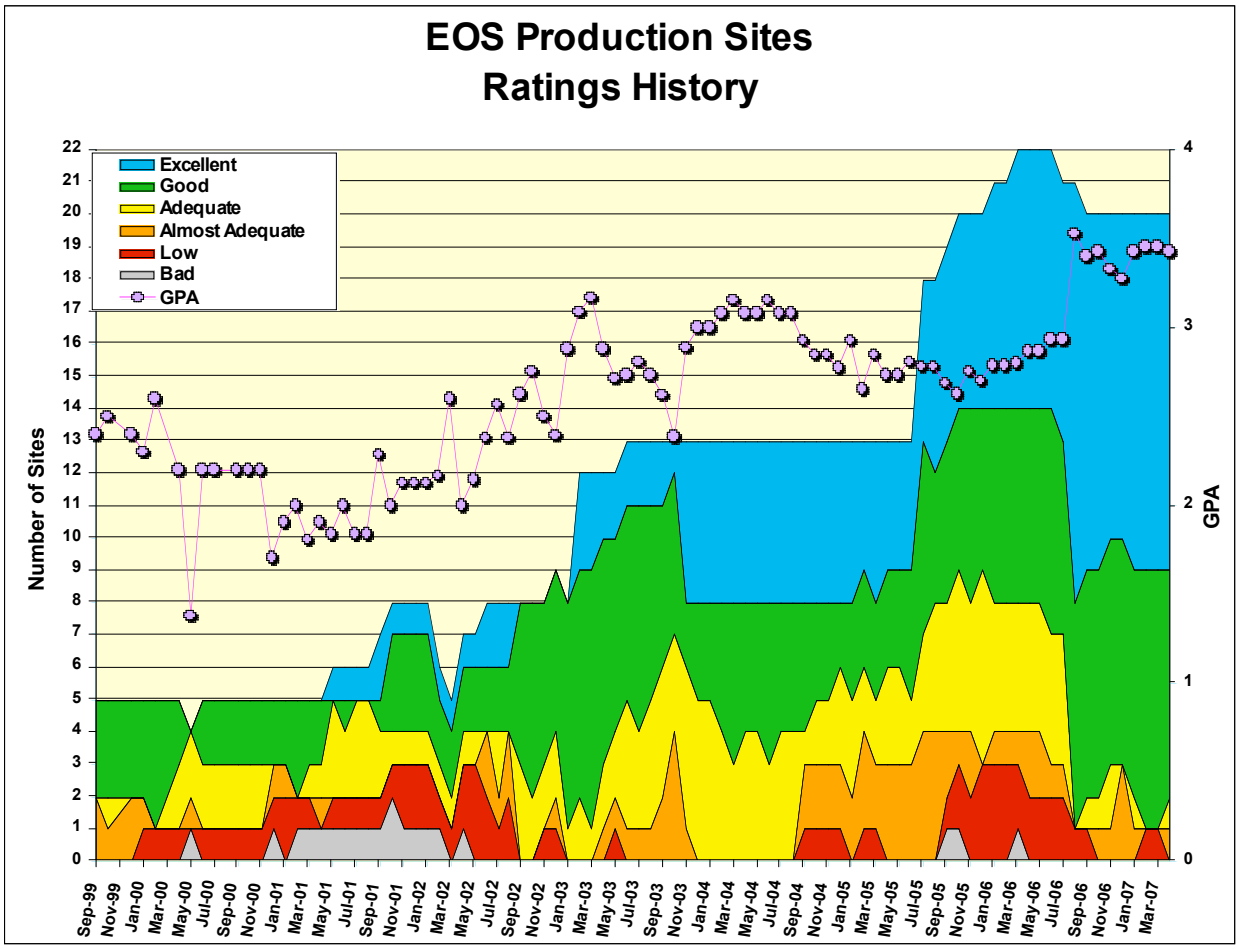
Downgrade: ↓ :
JPL → LaRC: Good→ Adequate
(See site discussion below for details)

Ratings Categories:

Rating	Value	Criteria
Excellent:	**4**	**Total Kbps** > Requirement * 3
Good:	**3**	1.3 * Requirement <= **Total Kbps** < Requirement * 3
Adequate:	**2**	Requirement < **Total Kbps** < Requirement * 1.3
Almost Adequate:	**1.5**	Requirement / 1.3 < **Total Kbps** < Requirement
Low:	**1**	Requirement / 3 < **Total Kbps** < Requirement / 1.3
Bad:	**0**	**Total Kbps** < Requirement / 3

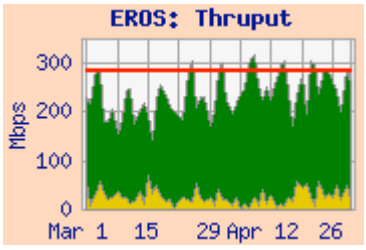
Where Total Kbps = Integrated Kbps (where available), otherwise just iperf

Ratings History:



The chart above shows the number of sites in each classification since EOS Production Site testing started in September 1999. Note that these ratings do NOT relate to absolute performance -- they are relative to the EOS requirements.

Integrated Charts: Integrated charts have been added to site details, where available. These charts are "Area" charts, with a pink background. A sample Integrated chart is shown here. The yellow area at the bottom represents the daily average of the user flow from the source facility (e.g., GSFC, in this example) to the destination facility (e.g., EROS, in this example) obtained from routers via "netflow". The green area is stacked on top of the user flow, and represents the "adjusted" daily average iperf thruput between the source-destination pair most closely corresponding to the requirement. This iperf measurement essentially shows the circuit capacity remaining with the user flows active. The adjustments are made to compensate for various systematic effects, and are best considered as an approximation. The red line is the requirement for the flow from the source to destination facilities.



Network Requirements vs. Measured Performance

April 2007		Requirements (mbps)		Testing					Ratings		
Source → Destination	Team (s)	Current Apr-07	Future Oct-07	Source → Dest Nodes	Avg User Flow mbps	iperf Avg mbps	Total Avg mbps	Integrated mbps	Rating re Current Requirements Apr-07	Rating re Current Requirements Last Month	Rating re Oct-07
GSFC –> ASF	QuikScat, Radarsat	n/a	n/a	GSFC-PTH → ASF	n/a	1.44	1.44		n/a	n/a	n/a
ASF –> LASP	QuikScat	0.02	0.02	ASF → LASP [via IOnet]	n/a	1.09	1.09		Excellent	E	Excellent
EDOS –> LASP	ICESat, QuikScat	0.4	0.4	EDOS --> LASP [via IOnet]	n/a	15.6	15.6		Excellent	E	Excellent
GSFC –> NOAA	QuikScat	0.0	0.0	n/a	n/a	n/a	n/a		n/a	n/a	n/a
GSFC –> EROS	MODIS, LandSat	285.4	285.4	GDAAC → EROS LPDAAC	25.0	250.7	275.7	252.2	A A	L	A A
GSFC –> JPL (PIP)	AIRS, ISTs	40.5	40.5	GDAAC → JPL-AIRS	9.3	75.5	84.8	77.2	GOOD	G	GOOD
JPL –> GSFC	AMSR-E, MISR, etc.	7.4	7.4	JPL-PTH → GSFC-PTH	n/a	63.4	63.4		Excellent	E	Excellent
JPL –> RSS	AMSR-E	2.5	2.5	JPL-PODAAC → RSS	n/a	4.4	4.4		GOOD	G	GOOD
LaRC –> JPL	TES, MISR	39.6	39.6	LARC-DAAC → JPL-TES	n/a	79.1	79.1		GOOD	G	GOOD
JPL –> LaRC	TES	52.6	52.6	JPL-PTH → LARC-PTH	n/a	61.4	61.4		Adequate	G	Adequate
GSFC –> LaRC	CERES, MISR, MOPITT	67.2	67.2	GDAAC → LDAAC	18.9	307.3	326.2	310.0	Excellent	E	Excellent
LaRC –> GSFC	MODIS, TES	0.2	0.2	LDAAC → GDAAC	n/a	213.8	213.8		Excellent	E	Excellent
JPL –> NSIDC	AMSR-E	1.3	1.3	JPL-PTH → NSIDC SIDADS	n/a	59.6	59.6		Excellent	E	Excellent
NSIDC –> GSFC	MODIS, ICESAT, QuikScat	13.3	13.3	NSIDC DAAC → GDAAC	0.1	112.4	112.5	112.4	Excellent	E	Excellent
GSFC –> NSIDC	MODIS, ICESAT, QuikScat	64.1	64.1	GDAAC → NSIDC-DAAC	1.0	86.5	87.5	86.5	GOOD	G	GOOD
NSSTC –> NSIDC	AMSR-E	7.5	7.5	NSSTC → NSIDC DAAC	n/a	19.4	19.4		GOOD	G	GOOD
LaRC –> NCAR	HIRDLS	5.4	5.4	LDAAC → NCAR	n/a	137.0	137.0		Excellent	E	Excellent
US –> JAXA	QuikScat, TRMM, AMSR	2.0	2.0	GSFC-EDOS-Mail → JAXA DDS	0.4	4.21	4.6	4.2	GOOD	G	GOOD
JAXA –> US	AMSR-E	1.3	1.3	JAXA DDS → JPL-QSCAT	n/a	3.5	3.50		GOOD	G	GOOD
GSFC –> ERSDAC	ASTER	12.5	12.5	EDOS → ERSDAC	3.6	76.2	79.8	77.2	Excellent	E	Excellent
ERSDAC –> EROS	ASTER	26.8	26.8	ERSDAC → EROS PTH	n/a	85.0	85.0		Excellent	E	Excellent
GSFC –> KNMI	OMI	3.3	3.3	GSFC-OMISIPS → OMI-PDR	n/a	18.9	18.9		Excellent	E	Excellent

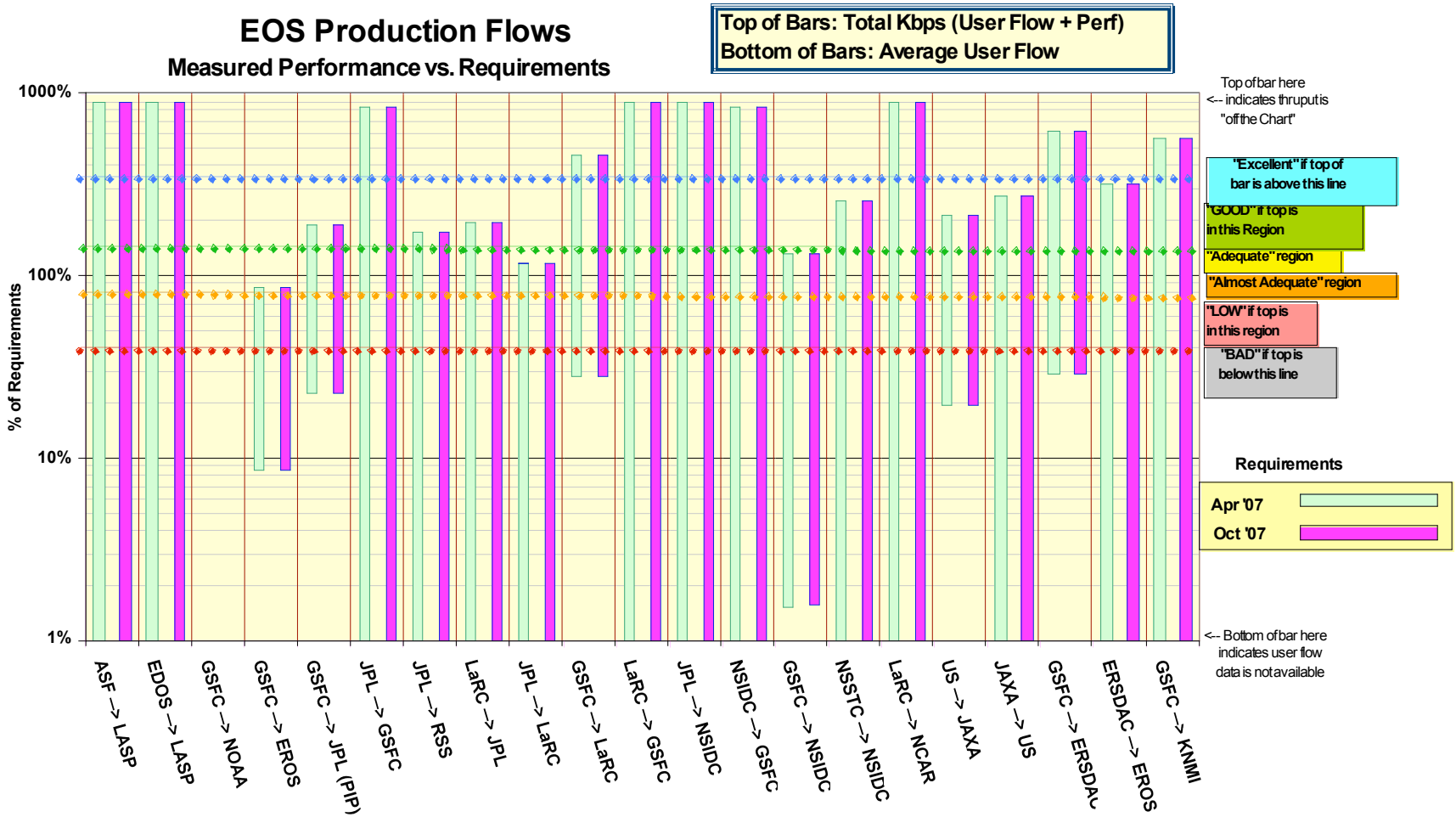
Notes: Flow Requirements include: TRMM, Terra, Aqua, Aura, ICESAT, QuikScat, GEOS

***Criteria:**

Excellent	**Total Kbps** > Requirement * 3
GOOD	1.3 * Requirement <= **Total Kbps** < Requirement * 3
Adequate	Requirement < **Total Kbps** < Requirement * 1.3
Almost Adequate	Requirement / 1.3 < **Total Kbps** < Requirement
LOW	Requirement / 3 < **Total Kbps** < Requirement / 1.3
BAD	**Total Kbps** < Requirement / 3

Ratings Summary	Apr-07 Score	Req Prev	Oct-07 Score
Excellent	11	11	11
GOOD	7	8	7
Adequate	1	0	1
Almost Adequate	1	0	1
LOW	0	1	0
BAD	0	0	0
Total	20	20	20
GPA	3.43	3.45	3.43

This graph shows two bars for each source-destination pair. Each bar uses the same actual measured performance, but compares it to the requirements for two different times (April '07 and October '07). Thus if the requirements increase, the same measured performance will be lower in comparison.



Interpretation: The bottom of each bar is the average measured user flow to a site. Thus the bottom of each bar indicates the relationship between the requirements and actual flows. Note that the requirements include a 50% contingency factor above what was specified by the projects, so a value of 66% would indicate that the project is flowing as much data as requested. The top of each bar represents the integrated measurement – this value is used to determine the ratings.

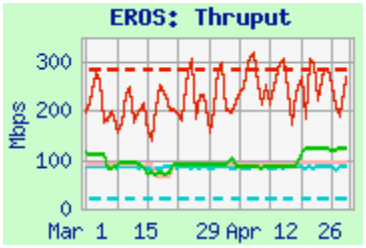
1) EROS:

Ratings: GSFC → EROS: ↑ Low → **Almost Adequate**
ERSDAC→ EROS: Continued **Excellent**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/EROS.shtml
http://ensight.eos.nasa.gov/Organizations/production/EROS_PTH.shtml

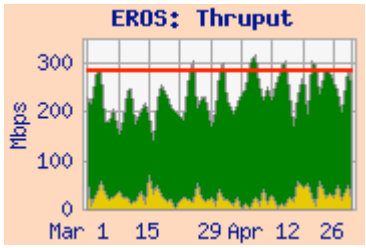
Test Results:

Source → Dest	Medians of daily tests (mbps)				
	Best	Median	Worst	User Flow	Integrated
GSFC-DAAC → EROS LPDAAC	330.8	250.7	93.8	25.0	252.2
GSFC-PTH → EROS PTH	479.4	297.8	93.0		
GSFC-ENPL → EROS PTH	483.4	472.9	316.3		
ERSDAC→ EROS	87.7	85.0	69.8		
NSIDC→ EROS	97.2	87.5	84.1		
LaRC→ EROS	92.5	92.5	83.5		
EROS LPDAAC → GSFC DAAC	141.8	128.0	76.5		
EROS PTH→ GSFC PTH	450.9	424.9	374.5		



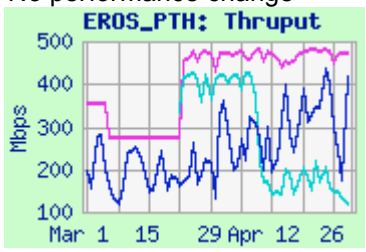
Requirements:

Source → Dest	Date	mbps	Rating
GSFC→ EROS	→ Mar '08	285	Almost Adequate
ERSDAC→ EROS	FY '06, '07	26.8	Excellent



Comments:

GSFC → EROS: The rating is based on the DAAC to DAAC measurement. The route from the GDAAC and GSFC-PTH hosts to EROS was changed in April. It formerly wast from GSFC to MAX via a private GigE, to Internet2 (formerly called Abilene) via 10 Gig, then via the Internet2 10 Gig backbone to StarLight, in Chicago, where it peered with the EROS private OC-12 (622 mbps). The new route is via NISN SIP, on its OC-48 (2.5 gbps) backbone, to the Chicago CIEF, then via GigE to StarLight, again peering with the EROS OC-12. Note that the EROS OC-12 is the limiting circuit in both cases. No performance change has been observed as a result of this route change.



The user flow this month was about the same as last month, but is still far below the recent averages and the nominal requirement, apparently due to the use of compression on the MODIS collection 5 data (began at the end of 2006). The user flow had only a small contribution to the integrated measurement on which the rating is based. The increased performance from last month is due to decreased congestion on the EBnet to Doors Gig-E circuit (in use from GDAAC and GSFC-PTH), due to a reduction in the GSFC DAAC to JPL flow for GEOS and AIRS reprocessing.. There is often significant on this circuit, as shown by the large best:worst ratio seen from these hosts. This increased performance improves the rating to "Almost Adequate". However, the requirement should be reviewed due to the MODIS collection 5 compression.

The GSFC-ENPL host has a direct connection to the MAX, bypassing the congested EBnet to Doors Gig-E circuit, and using the previous Abilene route. It does not experience similar congestion to the DAAC. From ENPL, the performance would be rated "Good".

ERSDAC → EROS: The median thruput from ERSDAC to EROS–PTH (in support of the ASTER flow) was stable on the APAN / Abilene route (limited by the ERSDAC 100 mbps tail circuit), and is more than 3 times the 26.8 mbps requirement, resulting in an "Excellent" rating.

NSIDC → EROS: The median thruput from NSIDC–SIDADS to EDC–PTH dropped from a median of 112 mbps in February, due to the increased RTT from the carrier's circuit rerouting of the EROS OC–12. This was corrected by the carrier on April 18, and performance recovered to previous levels.

LaRC → EROS: The thruput from LaRC–PTH to EDC–PTH was stable this month.

EROS → GSFC: The thruput for tests from EROS to GSFC (both DAAC to DAAC and PTH to PTH) were mostly stable this month, but note that the DAAC to DAAC flow cannot use a significant portion of the WAN capability.

2) JPL:

2.1) JPL ←→ GSFC:

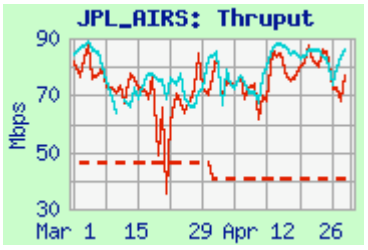
Ratings: GSFC → JPL: Continued **Good**
JPL → GSFC: Continued **Excellent**

Web Pages:

http://ensight.eos.nasa.gov/Missions/aqua/JPL_AIRS.shtml
http://ensight.eos.nasa.gov/Organizations/production/JPL_QSCAT.shtml
http://ensight.eos.nasa.gov/Organizations/production/JPL_PODAAC.shtml

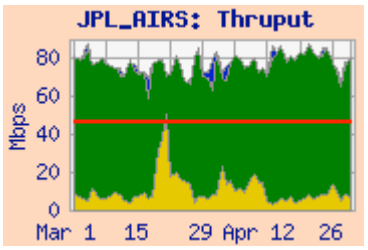
Test Results:

Source → Dest	NET	Medians of daily tests (mbps)				
		Best	Median	Worst	User Flow	Integrated
GSFC-DAAC → JPL-AIRS	PIP	91.1	75.5	38.2	9.3	77.2
GSFC-CNE → JPL-AIRS	SIP	89.7	83.4	47.1		
GSFC-PTH → JPL-QSCAT	PIP	88.8	73.2	40.6		
GSFC-PTH → JPL-PODAAC	PIP	91.6	86.6	53.8		
GSFC-PTH → JPL-MLS	PIP	70.2	55.4	18.8		
GSFC-CNE → JPL-MISR	SIP	86.9	72.3	28.9		
JPL-PTH→ GSFC PTH	PIP	85.2	63.4	62.9		
JPL-PODAAC→ GSFC DAAC	PIP	39.7	31.8	15.3		



Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → JPL Combined	March '07	46.3	Good
JPL → GSFC combined	CY '06-09	7.4	Excellent

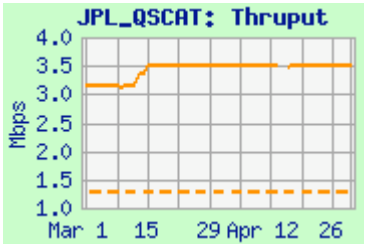


Comments:

GSFC → JPL:.

AIRS: Thruput increased a bit, due to reduced congestion on the EBnet to Doors gig-e at GSFC (but note the higher daily median and worst values from the CNE node, which is not subject to this congestion). The combined requirement dropped from 57.6 mbps in February, due to lower GEOS flows to MLS. The rating remains "Good".

Note the steep dip in GDAAC to AIRS thruput around March 21 (red line — top graph). Also note the corresponding peak in user flow at the same time on the integrated graph. The adjusted combination is substantially flat!

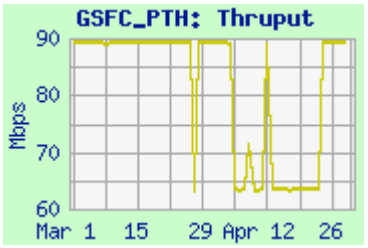


QSCATand PODAAC: Thruput from GSFC-PTH improved slightly this month, due to the reduced EBnet to Doors congestion..

MISR: Testing from GSFC-CNE was stable this month.

MLS: Testing was added from GSFC-PTH to MLS this month, related to GEOS flows.

JPL → GSFC: The previous JPL-PODAAC to GSFC-DAAC testing was replaced by JPL-PTH to GSFC-PTH testing to better reflect the network capabilities. Thruput dropped from 90 mbps to 65 mbps for most of April, before recovering. A similar drop was seen from JPL to LaRC, so the problem was likely at JPL (No change in RTT was observed). With the modest requirement, however, the rating remains "Excellent".



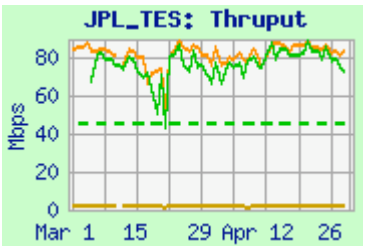
2.2) JPL ←→ LaRC

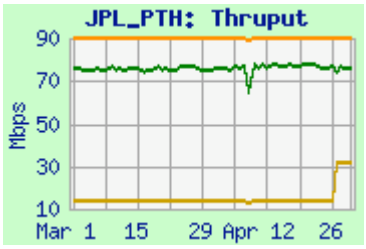
Ratings: LaRC → JPL: Continued **Good**
JPL→ LaRC: ↓ Good→ **Adequate**

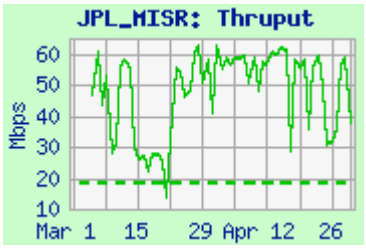
Web Pages:
http://ensight.eos.nasa.gov/Organizations/production/JPL_TES.shtml
http://ensight.eos.nasa.gov/Missions/terra/JPL_MISR.shtml

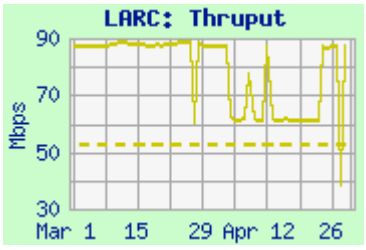
Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	**Median**	**Worst**
LaRC DAAC → JPL-TES	89.8	79.1	51.6
LaRC PTH → JPL-TES	90.5	83.6	60.8
LaRC PTH → JPL-TES sftp	1.80	1.79	1.63
LaRC PTH → JPL-MLS	90.3	85.2	66.2
LaRC PTH → JPL-PTH sftp	13.7	13.7	13.7
LaRC DAAC → JPL-MISR	64.0	56.9	23.0
JPL-PTH → LaRC PTH	83.3	61.4	59.6









Requirements:

Source → Dest	Date	Mbps	Rating
LaRC DAAC → JPL-TES	FY '07	29.8	Good
LaRC DAAC → JPL-MISR	FY '07	18.5	Good
LaRC DAAC → JPL-Combined	FY '07	45.8	Good
JPL → LaRC	FY '07	52.6	Adequate

Comments: LDAAC was moved to campus address space in March. **User flow data is no longer available from LaRC (has been requested but not approved)**. Thus no integrated graph is available for this flow.

LaRC→ JPL: Performance remained stable; the rating remains "Good". The combined requirement increased in November '06, with the addition of GEOS flows (was 39.6 mbps previously). Sftp results are much lower than iperf, due to TCP window limitations, but improved in late April from LaRC-PTH to JPL-PTH via a patch to increase this window size.

JPL → LaRC: This requirement is for TES products produced at the TES SIPS at JPL, being returned to LaRC for archiving. The measured thruput dropped for most of April, similar to the JPL to GSFC drop. The rating remains "Good".

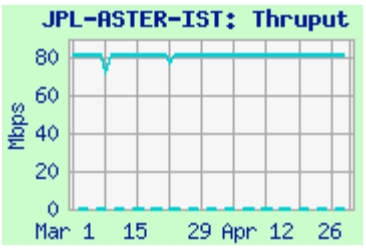
2.3) ERSDAC → JPL ASTER IST

Rating: Continued **Excellent**

Web Page:http://ensight.eos.nasa.gov/Organizations/production/JPL_PTH.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	**Median**	**Worst**
ERSDAC → JPL-ASTER-IST	82.1	81.6	54.1



Comments: This test was initiated in March '05, via APAN replacing the EBnet circuit. The very stable 82 mbps must be well in excess of the requirements (IST requirements are generally 311 kbps).

3) Boulder CO:

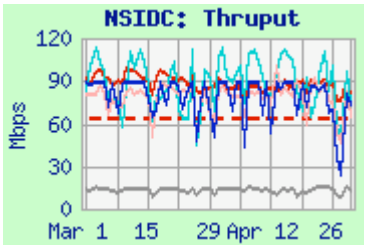
3.1) GSFC ← → NSIDC DAAC:

Ratings: NSIDC → GSFC: Continued **Excellent**
GSFC → NSIDC: Continued **Good**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/NSIDC.shtml

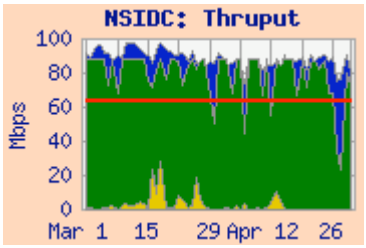
Test Results:

Source → Dest	Medians of daily tests (mbps)				
	Best	Median	Worst	User Flow	Integrated
GSFC-DAAC→ NSIDC-DAAC	100.8	86.5	41.4	1.0	86.5
GSFC-PTH → NSIDC-DAAC	99.0	79.9	35.4		
GSFC-ISIPS → NSIDC (iperf)	112.3	93.1	29.4		
GSFC-ISIPS → NSIDC (ftp)	21.3	13.7	6.8		
NSIDC DAAC → GSFC-DAAC	122.4	112.4	55.3		
NSIDC → GSFC-ISIPS (iperf)	84.1	82.1	49.7		

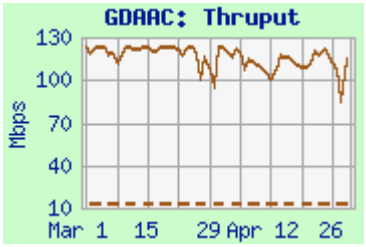


Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → NSIDC	CY '07	64.1	Good
NSIDC → GSFC	CY '06 – '07	13.3	Excellent



Comments: GSFC → NSIDC: This rating is based on testing from GDAAC to the NSIDC DAAC. The iperf and integrated thruput values were stable this month. This requirement varies, based on planned ICESAT reprocessing. This month the reprocessing **IS NOT** included. The Integrated thruput is above this lower requirement by a bit more than 30%, so the rating remains "Good". Note that in November and December '06 the reprocessing **was** included – the requirement was higher (78 mbps), so the same performance would have only rated "Adequate" Note that the integrated graph shows that the user flow is MUCH lower than the requirement.



NSIDC → GSFC: Performance from NSIDC to GSFC remained stable, after improving dramatically with the NISN WANR upgrade in August '06; the rating remains "Excellent".

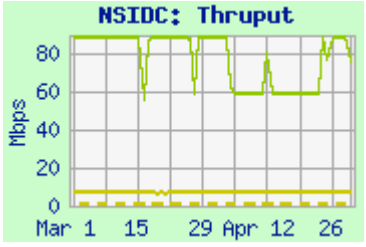
GSFC-ISIPS ← → NSIDC: Performance between ISIPS and NSIDC is at nominal levels for the circuit capacity. Iperf thruput was much higher than ftp due to window size limitations.

3.2) JPL → NSIDC:

Ratings: JPL → NSIDC: Continued **Excellent**

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	Median	Worst	Requirement
JPL PTH → NSIDC-PTH	76.3	59.6	22.2	1.34
JPL PODAAC → NSIDC-SIDADS	7.4	7.2	6.4	1.34



Comments: The test from JPL-PTH to NSIDC-SIDADS more fully assesses the true network capability – the thruput is much higher than from PODAAC – but suffered the same drop in April as did the JPL → GSFC and JPL →LaRC thruput. Thruput from PODAAC was again stable this month after the previous improvement from the NISN WANR upgrade. The rating remains "Excellent".

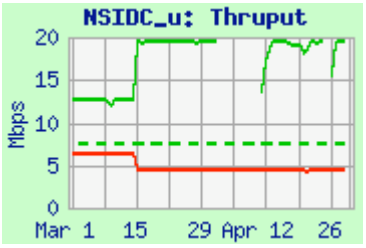
3.3) NSSTC → NSIDC:

Ratings: NSSTC → NSIDC: Continued **Good**

Web Pages: http://ensight.eos.nasa.gov/Missions/aqua/NSIDC_u.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	**Median**	**Worst**	**Req.**
NSSTC → NSIDC DAAC (iperf)	19.6	19.4	7.7	7.5
NSSTC → NSIDC DAAC (ftp)	4.6	4.5	4.3	



Comments: NSSTC (GHRC, UAH, Huntsville, AL) sends AMSR-E L2/L3 data to NSIDC. Median Iperf thruput improved in mid-March while ftp declined. This implies a route change with higher thruput but also higher RTT (RTT measurements are not available, however). The median iperf thruput remains more than 30 % over the requirement, so is rated "Good"

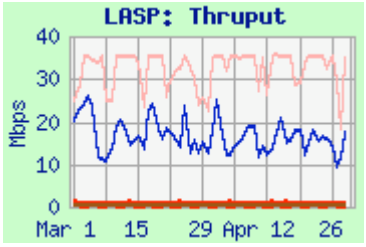
3.4) LASP:

Ratings: GSFC → LASP: Continued **Excellent**
ASF → LASP: Continued **Excellent**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/LASP.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	**Median**	**Worst**	**Req**
ASF → LASP	1.34	1.09	0.56	0.024
GSFC EDOS → LASP	29.1	15.6	5.9	0.4
GSFC PTH → LASP (iperf)	35.8	35.3	12.3	
GSFC PTH → LASP (sftp)	0.50	0.50	0.46	



Comments: The requirements are divided into ASF and GSFC sources:

ASF → LASP: Thruput from ASF to LASP is limited by ASF T1 circuit, rating "Excellent", due to the modest requirement.

GSFC → LASP: GSFC → LASP iperf thruput is noisy but well above the requirement; the rating continues "Excellent. But sftp thruput is MUCH lower than iperf, due to window size limitations. A patch is available.

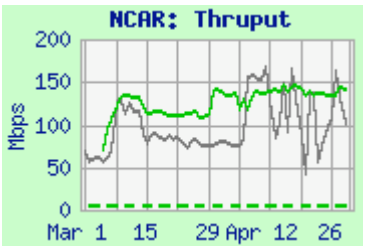
3.5) NCAR:

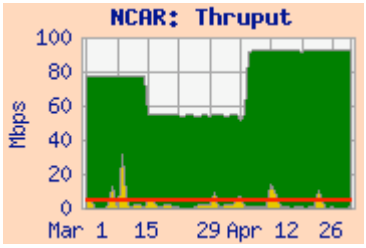
Ratings: LaRC → NCAR: Continued **Excellent**
GSFC → NCAR: Continued **Excellent**

Web Pages http://ensight.eos.nasa.gov/Missions/terra/NCAR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)			
	Best	**Median**	**Worst**	**Requirement**
LaRC → NCAR	150.1	137.0	95.2	5.4
GSFC → NCAR	92.7	92.6	89.6	5.1





Comments: NCAR (Boulder, CO) is a SIPS for MOPITT (Terra, from LaRC), and has MOPITT and HIRDLS QA (Aura, from GSFC) requirements. The thruput from both sources improved in early March, then declined in mid March, due to routing changes, apparently in Colorado. It improved again in April with retuning. Thruput from LaRC is well above 3 x the requirement, so the rating remains "Excellent".

From GSFC the median thruput is also well over 3 x the requirement, so that rating also remains "Excellent".

The Integrated graph shows that the user flow from GSFC is moderately consistent with the stated requirement.

4) GSFC ←→ LaRC:

Ratings: GSFC → LaRC: Continued **Excellent**
LDAAC → GDAAC: Continued **Excellent**

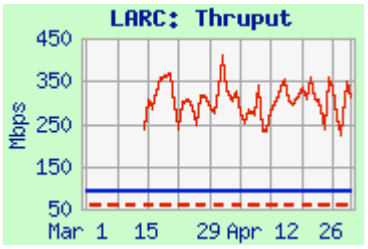
Web Pages: http://ensight.eos.nasa.gov/Organizations/production/LARC.shtml
http://ensight.eos.nasa.gov/Organizations/production/LATIS.shtml

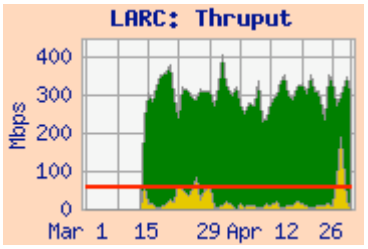
Test Results:

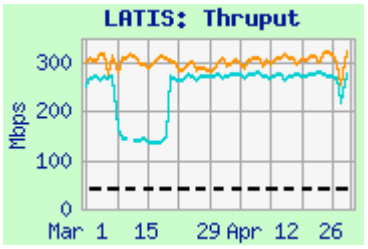
Source → Dest	Medians of daily tests (mbps)				
	Best	Median	Worst	User Flow	Integrated
GDAAC → LDAAC	405.7	307.3	164.5	18.9	310.0
GSFC-NISN → LaTIS	284.0	273.5	223.8		
GSFC-PTH → LaRC-PTH	93.4	93.3	81.8		
GSFC-PTH → LaRC-ANGe	320.5	307.7	228.9		
LDAAC → GDAAC	312.6	213.8	101.9		
LARC-ANGe → GSFC-PTH	265.0	244.2	204.6		

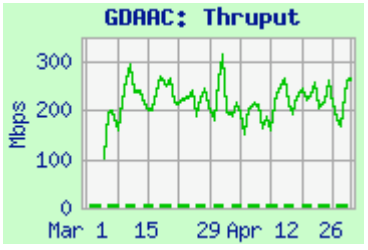
Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → LARC (Combined)	Nov '06 – Feb '07	68.7	Good
LDAAC → GDAAC	FY '07	0.2	Excellent









Comments: The LaRC ECS DAAC was moved to the campus LAN (rather than being directly connected to NISN (and readdressed into LaRC campus address space) in late February. Testing was down for up to 3 weeks due to this transition.

GSFC → LaRC: The combined requirement had been split between LDAAC and LaTIS when the flows were on separate circuits, but is now treated as a single requirement as they have been both on PIP since Feb '05. The thruput to the new ECS location is approximately the same as to the old one. The "Excellent" rating is based on the GDAAC to LaRC ECS DAAC thruput, compared to the combined requirement. Note: the lower thruput (around 90 mbps) to LaRC-PTH is limited by its 100 mbps LAN connection.

The integrated graph shows that although the average user flow is well below the requirement, the flow frequently equals or exceeds the requirement.

LaTIS: The thruput to LaTIS was mostly stable this month, after it improved dramatically in late January, as a result of LaRC LAN reconfiguration. The initial thruput was over 400 mbps, but testing was retuned lower (!) to avoid overtaxing the NISN LaRC router.

LaRC → GSFC: Performance from LDAAC → GDAAC was about the same after the LDAAC move as previously. The thruput remained much more than 3 x this requirement, so the rating continues as "Excellent".

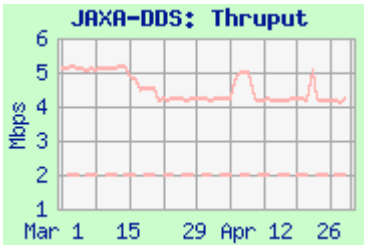
5) US ←→ JAXA:

Ratings: JAXA → US: Continued **Good**
US → JAXA: Continued **Good**

Web Pages http://ensight.eos.nasa.gov/Organizations/production/JAXA_EOC.shtml
http://ensight.eos.nasa.gov/Organizations/production/JAXA_HEOC.shtml
http://ensight.eos.nasa.gov/Organizations/production/JPL_QSCAT.shtml

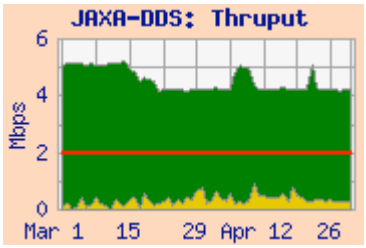
Test Results:

Source → Dest	Medians of daily tests (mbps)				
	Best	Median	Worst	User Flow	Integrated
GSFC-EDOS-Mail → JAXA-DDS	4.30	4.21	3.72	0.39	4.24
GSFC–EDOS → JAXA-azusa	7.68	7.60	4.25		
GSFC-ENPL → JAXA-azusa	77.2	61.0	37.1		
GSFC-PTH → JAXA-azusa	51.4	33.1	18.1		
GSFC-PTH → JAXA (sftp)	0.84	0.83	0.79		
JAXA-DDS → JPL-QSCAT	3.54	3.50	3.09		
JAXA-DDS → GSFC-DAAC	1.82	1.81	1.59		
JAXA-azusa→ GSFC-MAX	75.8	53.1	18.5		



Requirements:

Source → Dest	Date	Mbps	Rating
GSFC → JAXA	Nov '03 – Mar '08	1.99	Good
JAXA → US	Nov '03 – Mar '08	1.28	Good

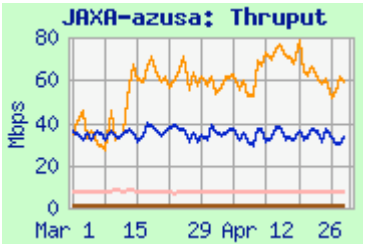


Comments: On approx March 13, JAXA changed its route to NASA to use SInet to NY to Abilene, rather than APAN to LA to Abilene. This slightly increased RTT, but also allowed much improved thruput. The thruput improvement is suspected to relate to the way JAXA connects to these two networks, because both of them have 10 Gig circuits to the US.

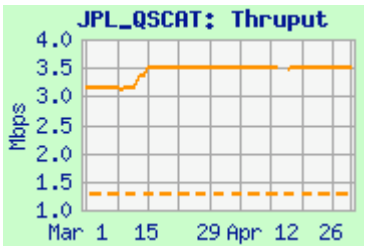
US → JAXA: DDS: Performance from GSFC dropped in mid March, due to the RTT increase – it is limited by TCP window size and 10 mbps Ethernets on JAXA's DDS node, and the GSFC-EDOS-Mail node. Thruput continued to be above the requirement, but below 3 x the requirement; so the rating remains "Good".

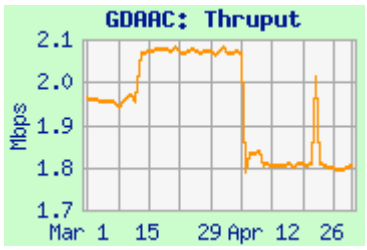
The integrated graph shows consistent user flow, well below the requirement.

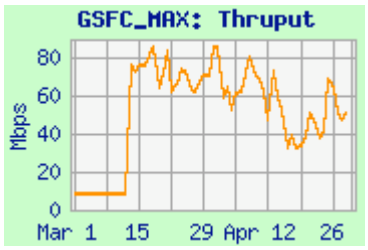
Azusa: Performance from GSFC-PTH and GSFC-ENPL to the JAXA azusa test node is not limited by a 10 mbps Ethernet, so its much higher performance more accurately shows the capability of the networks. But thruput using sftp between these same nodes is much lower, limited by ssh window size. A patch is available, but is not installed



JAXA → US: Performance improved with the switch from APAN to Sinet and from DDS is limited by TCP window size and 10 mbps Ethernets (but it has not yet been retuned to fully utilize the increased network capability). The thruput from JAXA to JPL was more than 30% over the requirement, but less than 3 x, so the rating remains "Good". The JAXA outflow route change on March 13 greatly improved the thruput capability from JAXA to GSFC.







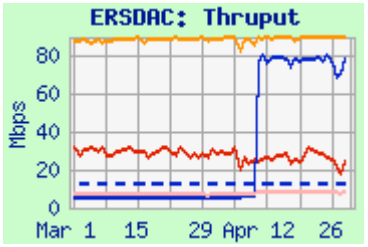
6) ERSDAC ←→ US:

Rating: Continued **Excellent**

Web Page :http://ensight.eos.nasa.gov/Organizations/production/ERSDAC.shtml

US → ERSDAC Test Results

Source → Dest	Medians of daily tests (mbps)				
	Best	Median	Worst	User Flow	Integrated
GSFC-EDOS → ERSDAC	83.3	76.2	33.6	3.6	77.2
GDAAC → ERSDAC	33.5	26.7	12.3		
GSFC ENPL (FE) → ERSDAC	89.6	89.6	81.2		

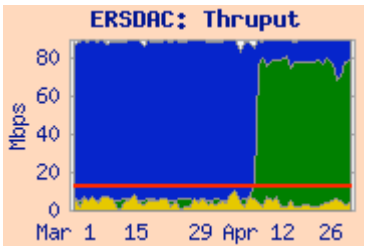


Requirements:

Source → Dest	FY	Mbps	Rating
GSFC → ERSDAC	'03 - '07	12.5	**Excellent**

Comments: Dataflow from GSFC to ERSDAC was switched to APAN in February '05, and the performance above is via that route.

Testing from EDOS to ERSDAC was switched to use a FastE interface around April 10 (was previously limited by a 10 mbps Ethernet at EDOS). This resulted in a big improvement in performance– this test is now used as the basis for the "Excellent" rating. Performance is now similar to GSFC-ENPL.



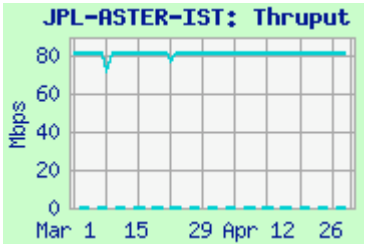
The integrated chart shows that the user flow is below the requirement, but not by a huge factor.

The thruput from GDAAC is apparently limited by packet loss at the GigE to FastE switch at Tokyo-XP. The GigE GDAAC source does not see any bottlenecks until this switch (The Abilene and APAN backbones are 10 Gbps), and thus exceeds capacity of the switch's FastE output circuit. But the FastE connected EDOS and GSFC-ENPL nodes are limited to 100 mbps by their own interfaces, so do not suffer performance degrading packet loss – and the performance is much higher.

The requirement now includes the level 0 flows which used to be sent by tapes. The thruput increased in Nov '06 (and got steadier from GSFC-ENPL at the same time). It continues to be more than 3 x this requirement, so the rating remains "Excellent".

ERSDAC → US Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	Median	Worst
ERSDAC → JPL-ASTER IST	82.1	81.6	54.1
ERSDAC → EROS	87.7	85.0	69.8

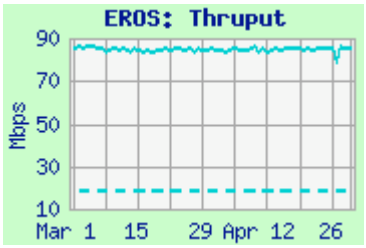


Requirements:

Source → Dest	Date	mbps	Rating
ERSDAC→ EROS	FY '06	26.8	**Excellent**

Comments:

ERSDAC → JPL-ASTER-IST: This test was initiated in March '05, via APAN replacing the EBnet circuit. The results are much higher than previously via the 1 mbps ATM circuit, and should be considered "Excellent" (no requirement is specified at this time – but other IST requirements are 311 kbps)



ERSDAC → EROS: The results from this test (in support of the ERSDAC to EROS ASTER flow, replacing tapes) were very stable this month. Thruput improved to these present values in April '05 after the Abilene to NGIX-E connection was repaired. The median thruput is more than 3 x the requirement, so the rating remains "Excellent"

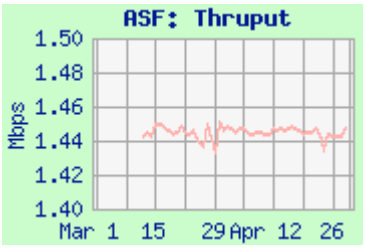
7) ASF

Rating: Continued **Excellent**

Web Page: http://ensight.eos.nasa.gov/Organizations/production/ASF.shtml

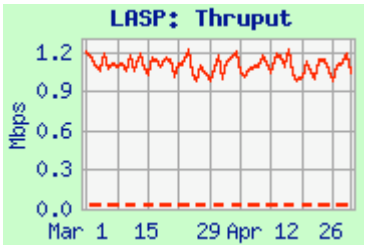
Test Results:

Source → Dest	Medians of daily tests (mbps)		
	Best	**Median**	**Worst**
GSFC-PTH → ASF	1.46	1.44	1.32
ASF → LASP	1.34	1.09	0.56



Comments: **GSFC to ASF**: Testing to ASF transitioned to IOnet in April '06 – accordingly, testing was discontinued from ASF to NOAA and JPL-SEAPAC; also user flow data is no longer available.

Performance to ASF has been consistent with the T1 (1.5 mbps) circuit capacity. Testing resumed from GSFC-PTH in March, after the CSAFS node switch at the end of January, with very similar results.



ASF to LASP: Performance was stable; the rating remains "Excellent".

Requirements:

Source → Dest	Date	kbps	Rating
ASF→ LASP	FY '07	24	**Excellent**

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8) Other SIPS Sites:

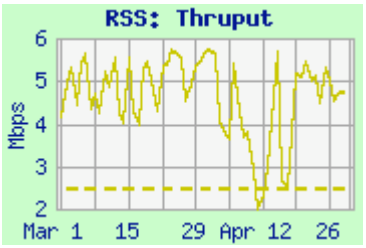
Web Pages http://ensight.eos.nasa.gov/Missions/aqua/RSS.shtml
http://ensight.eos.nasa.gov/Missions/aura/KNMI_OMIPDR.shtml

Test Results:

Source → Dest	Medians of daily tests (mbps)				
	Best	**Median**	**Worst**	**Requirement**	**Rating**
JPL → RSS	5.7	4.4	2.0	2.4	Continued **Good**
OMISIPS → KNMI-ODPS	19.0	18.9	17.8	3.3	Continued **Excellent**

Comments:

8.1 RSS: RSS (Santa Rosa, CA) is a SIPS for AMSR-E (Aqua), receiving data from JPL, and sending its processed results to GHCC (aka NSSTC) (Huntsville, AL). The NISN dedicated circuit from JPL to RSS was upgraded in August '05 from 2 T1s (3 mbps) to 4 T1s (6 mbps) to accommodate the larger RSS to GHCC flow. This month the thruput again was noisy but mostly stable. Periods of low performance are believed to be attributable to correspondingly high user flow. User flow data remains unavailable on this circuit. The median iperf thruput remains more than 30% above the requirement, so the rating remains "Good".



Note that with the present configuration (passive servers at both RSS and GHCC), the RSS to GHCC performance cannot be tested.

8.2 KNMI: KNMI (DeBilt, Netherlands) is a SIPS and QA site for OMI (Aura). The route from GSFC is via MAX to Abilene, peering in DC with Geant's 10Gbps circuit Frankfurt, then Surfnet via Amsterdam. The rating is now based on the results from OMISIPS at GSFC to the ODPS primary server, protected by a firewall. This was quite a bit lower than previously to the Backup server, which was outside the firewall. Thruput remains well above 3 x the requirement, rating "Excellent".